

WHAT IS CLAIMED IS:

1. A first apparatus for use with an irrigation system comprising:
a processor;
5 a sensor coupled to the processor and adapted to provide a sensor response; and
a communication circuit coupled to the processor;
wherein the processor is adapted to:
cause the communication circuit to transmit a first signal in response to the
sensor response, the first signal having a first signal strength; and
10 cause the communication circuit to transmit a second signal having a second
signal strength, wherein the second signal strength is less than the first
signal strength.
2. The first apparatus of claim 1 wherein the communication circuit includes one of a
15 transmitter and a transceiver.
3. The first apparatus of claim 1 wherein the sensor is comprised of an electrical
contact adapted to be actuated and wherein the sensor response is the actuation of the
electrical contact.
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4. The first apparatus of claim 1 wherein the sensor is comprised of an electrical
contact adapted to be actuated and wherein the sensor response is the actuation of the
electrical contact, the first apparatus further comprising a user input device for inputting a
command, said input device being adapted to actuate the electrical contact.
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5. The first apparatus of claim 4 wherein the electrical contact has a first position and
a second position, wherein the electrical contact is moved from the first position to the
second position when the electrical contact is actuated, and wherein the processor causes the
communication circuit to transmit the second signal when the electrical contact is in the
30 second position for a predetermined period of time.

6. The first apparatus of claim 1 further comprising a user input device for inputting a command, said input device being coupled to the processor, wherein the second signal is transmitted in response to the command from the input device.

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7. The first apparatus of claim 6 wherein the user input device is one of a button, a touch screen, a voice-activated device, and a menu structure shown on a display panel that is navigated by a keypad.

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8. The first apparatus of claim 1 wherein the second signal strength is between 20% and 80% of the first signal strength.

9. The first apparatus of claim 1 wherein the second signal strength is between 40% and 60% of the first signal strength.

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10. The first apparatus of claim 1 wherein the first apparatus is for use with a second apparatus that is adapted to receive the first and second signals, the first apparatus further comprising an indicator coupled to the processor and adapted to provide a notification of at least one event of the group consisting of: the transmitting of the second signal by the communication circuit, the receipt of the second signal by the second apparatus, and the sensor response corresponding to a predetermined value.

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11. The first apparatus of claim 10 wherein the indicator includes one of a sound generation device, a panel adapted to display text, and a LED.

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12. The first apparatus of claim 1 wherein the sensor is a water sensor.

13. The first apparatus of claim 1 wherein the sensor is one of a temperature sensor, a humidity sensor, a ground moisture sensor, a solar radiation sensor, a wind speed sensor, and a water flow rate sensor.

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14. The first apparatus of claim 1 wherein the first apparatus has an identity, the first apparatus further comprising a memory coupled to the processor, said memory being adapted to store an identity code corresponding to the first apparatus identity, and wherein the first
5 signal includes the identity code.

15. The first apparatus of claim 1 wherein the second signal has an identity and wherein the second signal includes information corresponding to the identity.

10 16. A first apparatus for use with a second apparatus and for use with an irrigation system having an irrigation system controller adapted to operate an irrigation program, said second apparatus having a sensor adapted to provide a sensor response, said second apparatus being adapted to transmit a first signal in response to the sensor response and to transmit a second signal, said first signal having a first signal strength and said second signal having a
15 second signal strength that is less than the first signal strength, the first apparatus comprising:
a processor coupled to the irrigation system controller;
an indicator coupled to the processor; and
a communication circuit coupled to the processor and adapted to receive the first
signal and the second signal;
20 wherein the processor is adapted to:
cause the irrigation system controller to terminate the irrigation program when
the communication circuit receives the first signal; and
cause the indicator to activate when the communication circuit receives the
second signal.

25 17. The first apparatus of claim 16 wherein the communication circuit includes one of a transmitter and a transceiver.

18. The first apparatus of claim 16 wherein the second signal strength is between
30 20% and 80% of the first signal strength.

19. The first apparatus of claim 16 wherein the second signal strength is between 40% and 60% of the first signal strength.

5 20. The first apparatus of claim 16 further comprising a relay circuit coupled to the processor and to the irrigation system controller wherein the processor is adapted to cause the irrigation system controller to terminate the irrigation program by actuating the relay circuit when the communication circuit receives the first signal.

10 21. The first apparatus of claim 16 wherein the indicator comprises one of a sound generation device, a panel adapted to display text, and a LED.

22. The first apparatus of claim 16 wherein the sensor is a water sensor.

15 23. The first apparatus of claim 16 wherein the sensor is one of a temperature sensor, a humidity sensor, a ground moisture sensor, a solar radiation sensor, a wind speed sensor, and a water flow rate sensor.

20 24. The first apparatus of claim 16 wherein the second apparatus has an identity, the first apparatus further comprising a memory coupled to the processor, said memory being adapted to store an identity code corresponding to the second apparatus identity, and wherein the first signal includes the identity code.

25 25. The first apparatus of claim 16 wherein the second signal has an identity and wherein the second signal includes information corresponding to the identity.

26. A method of testing a communication path between a first apparatus and a second apparatus, said first and second apparatuses being for use in an irrigation system, said first apparatus having a sensor adapted to provide a sensor response, the method comprising:
30 placing the first apparatus at a location that is spaced apart from the second apparatus;

inputting a command with a user input device; and
transmitting a first signal with a communication circuit in response to the command,
said first signal having a first signal strength, said communication circuit
being adapted to transmit a second signal in response to the sensor response,
5 said second signal having a greater signal strength than the first signal
strength.

27. The method of claim 26 wherein the communication circuit includes one of a
transmitter and a transceiver.

10 28. The method of claim 26 wherein the sensor is comprised of an electrical contact
adapted to be actuated and wherein the sensor response is the actuation of the electrical
contact.

15 29. The method of claim 26 wherein the sensor is comprised of an electrical contact
adapted to be actuated and wherein the sensor response is the actuation of the electrical
contact, and wherein the user input device is adapted to actuate the electrical contact.

20 30. The method of claim 26 wherein the user input device is one of a button, a touch
screen, a voice-activated device, and a menu structure shown on a display panel that is
navigated by a keypad.

25 31. The method of claim 26 wherein the first signal strength is between 20% and
80% of the second signal strength.

32. The method of claim 26 wherein the first signal strength is between 40% and
60% of the second signal strength.

33. The method of claim 26 wherein the sensor is a water sensor.

34. The method of claim 26 wherein the sensor is one of a temperature sensor, a humidity sensor, a ground moisture sensor, a solar radiation sensor, a wind speed sensor, and a water flow rate sensor.

5 35. A first apparatus for use with an irrigation system comprising:
means for providing a first response as a function of an environmental condition;
means for transmitting a first signal having a first signal strength and a second signal
 having a second signal strength, wherein the second signal strength is less
 than the first signal strength;
10 a processor coupled to the providing means and the transmitting means;
 and
 a program logic executed by the processor, comprising:
 means for causing the transmitting means to transmit the first signal in
 response to the first response; and
15 means for causing the transmitting means to transmit the second signal.

 36. The first apparatus of claim 35 further comprising means for manually inputting
a command,
 wherein the processor is coupled to the inputting means; and
20 wherein the means for causing the transmitting means to transmit the second signal is
 in response to the command.

 37. The first apparatus of claim 36 wherein the inputting means has a first position
and a second position,
25 wherein the inputting means is moved from the first position to the second position
 when the command is inputted, and
 wherein the means for causing the transmitting means to transmit the second signal
 transmits the second signal when the inputting means is in the second position
 for a predetermined period of time.

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38. The first apparatus of claim 35 wherein the second signal strength is between 20% and 80% of the first signal strength.

39. The first apparatus of claim 35 wherein the second signal strength is between
5 40% and 60% of the first signal strength.

40. The first apparatus of claim 35 wherein the first apparatus is for use by a user and for use with a second apparatus that is adapted to receive the first and second signals, the first apparatus further comprising means for notifying the user,
10 wherein the processor is coupled to the notifying means; and
wherein the program logic further comprises:
means for causing the notifying means to notify the user of one event of the
group consisting of: the transmitting of the second signal by the
transmitting means, the receipt of the second signal by the second
15 apparatus, and the first response corresponding to a predetermined
value.

41. The first apparatus of claim 35 wherein the first apparatus has an identity, the first apparatus further comprising means for storing identity data corresponding to the first
20 apparatus identity,
wherein said storing means is coupled to the processor; and
wherein the first signal includes the identity data.

42. The first apparatus of claim 35 wherein the second signal has a signal identity
25 and wherein the second signal includes data corresponding to the signal identity.

43. A first apparatus for use with an irrigation system having an irrigation controller adapted to provide a control signal, the first apparatus comprising:
a processor coupled to the irrigation controller and adapted to process the control
30 signal; and

a communication circuit coupled to the processor;
wherein the processor is adapted to:

cause the communication circuit to transmit a first signal in response to the
control signal, the first signal having a first signal strength; and

5 cause the communication circuit to transmit a second signal having a second
signal strength, wherein the second signal strength is less than the first
signal strength.

44. The first apparatus of claim 43 wherein the communication circuit includes one
10 of a transmitter and a transceiver.

45. The first apparatus of claim 43 further comprising a user input device for
inputting a command, said user input device being coupled to the processor, wherein the
second signal is transmitted in response to the command from the user input device.

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46. The first apparatus of claim 45 wherein the user input device is one of a button, a
touch screen, a voice-activated device, and a menu structure shown on a display panel that is
navigated by a keypad.

20 47. The first apparatus of claim 43 wherein the second signal strength is between
20% and 80% of the first signal strength.

48. The first apparatus of claim 43 wherein the second signal strength is between
40% and 60% of the first signal strength.

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49. The first apparatus of claim 43 wherein the first apparatus is for use with a
second apparatus that is adapted to receive the first and second signals, the first apparatus
further comprising an indicator coupled to the processor and adapted to provide a notification
of at least one event of the group consisting of: the transmitting of the second signal by the
30 communication circuit and the receipt of the second signal by the second apparatus.

50. The first apparatus of claim 49 wherein the indicator includes one of a sound generation device, a panel adapted to display text, and a LED.

51. The first apparatus of claim 43 wherein the first apparatus has an identity, the first apparatus further comprising a memory coupled to the processor, said memory being adapted to store an identity code corresponding to the first apparatus identity, and wherein the first signal includes the identity code.

52. The first apparatus of claim 43 wherein the second signal has an identity and wherein the second signal includes information corresponding to the identity.

53. A first apparatus for use with a second apparatus and for use with an irrigation system having an irrigation controller adapted to provide a control signal for the actuation of a valve, the second apparatus being coupled to the irrigation controller, the second apparatus being adapted to transmit a first signal having a first signal strength in response to the control signal and adapted to transmit a second signal having a second signal strength that is less than the first signal strength, the first apparatus comprising:

a processor coupled to the valve;
an indicator coupled to the processor; and
a communication circuit coupled to the processor and adapted to receive the first signal and the second signal;
wherein the processor is adapted to:
cause the valve to actuate when the communication circuit receives the first signal; and
cause the indicator to activate when the communication circuit receives the second signal.

54. The first apparatus of claim 53 wherein the communication circuit includes one of a transmitter and a transceiver.

55. The first apparatus of claim 53 wherein the second signal strength is between 20% and 80% of the first signal strength.

5 56. The first apparatus of claim 53 wherein the second signal strength is between 40% and 60% of the first signal strength.

10 57. The first apparatus of claim 53 further comprising a contact coupled to the processor and coupled to the valve wherein the processor is adapted to cause the valve to actuate by actuating the contact when the communication circuit receives the first signal.

58. The first apparatus of claim 53 wherein the indicator is comprised of one of a sound generation device, a panel adapted to display text, and a LED.

15 59. The first apparatus of claim 53 wherein the second apparatus has an identity, the first apparatus further comprising a memory coupled to the processor, said memory being adapted to store an identity code corresponding to the second apparatus identity, and wherein the first signal includes the identity code.

20 60. The first apparatus of claim 53 wherein the second signal has an identity and wherein the second signal includes information corresponding to the identity.

25 61. A method of testing a communication path between a first apparatus and a second apparatus, said first and second apparatuses being for use in an irrigation system having an irrigation controller adapted to provide a control signal, the method comprising:
placing the first apparatus at a location that is spaced apart from the second apparatus;
inputting a user command with a user input device; and
transmitting a first signal with a communication circuit in response to the user command, said first signal having a first signal strength, said communication circuit being adapted to transmit a second signal in response to the control

signal, said second signal having a greater signal strength than the first signal strength.

5 62. The method of claim 61 wherein the communication circuit includes one of a transmitter and a transceiver.

63. The method of claim 61 wherein the user input device is one of a button, a touch screen, a voice-activated device, and a menu structure shown on a display panel that is navigated by a keypad.

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64. The method of claim 61 wherein the first signal strength is between 20% and 80% of the second signal strength.

15 65. The method of claim 61 wherein the first signal strength is between 40% and 60% of the second signal strength.

66. The method of claim 61 wherein the second apparatus is in wired electrical communication with a solenoid-actuated valve.

20 67. A first apparatus for use with an irrigation system having an irrigation controller adapted to provide a control signal, said first apparatus comprising:

a processor coupled to the irrigation controller and adapted to process the control signal;

25 means for transmitting a first signal having a first signal strength and a second signal having a second signal strength, wherein the second signal strength is less than the first signal strength;

wherein the processor is coupled to the transmitting means;

and

a program logic executed by the processor, comprising:

means for causing the transmitting means to transmit the first signal in
response to the control signal; and
means for causing the transmitting means to transmit the second signal.

5 68. The first apparatus of claim 67 further comprising means for manually inputting
a user command,
 wherein the processor is coupled to the inputting means; and
 wherein the means for causing the transmitting means to transmit the second signal is
 in response to the user command.

10 69. The first apparatus of claim 67 wherein the second signal strength is between
20% and 80% of the first signal strength.

 70. The first apparatus of claim 67 wherein the second signal strength is between
15 40% and 60% of the first signal strength.

 71. The first apparatus of claim 67 wherein the first apparatus is for use by a user and
for use with a second apparatus that is adapted to receive the first and second signals, the first
apparatus further comprising means for notifying the user,

20 wherein the processor is coupled to the notifying means; and
 wherein the program logic further comprises:

 means for causing the notifying means to notify the user of one event of the
 group consisting of: the transmitting of the second signal by the
 transmitting means and the receipt of the second signal by the second
25 apparatus.

 72. The first apparatus of claim 67 wherein the first apparatus has an identity, the
first apparatus further comprising means for storing identity data corresponding to the first
apparatus identity,

30 wherein said storing means is coupled to the processor; and

wherein the first signal includes the identity data.

73. The first apparatus of claim 67 wherein the second signal has a signal identity and wherein the second signal includes data corresponding to the signal identity.